TEACHERS' RETIREMENT BOARD

REGULAR MEETING

SUBJECT: Update on STRS Year 2000 Project ITEM NUMBER: 11

ATTACHMENT(S): 0

ACTION: ____ DATE OF MEETING: June 4, 1998

INFORMATION: X PRESENTER(S): Mr. Martin/Ms. Piombo

SUMMARY

STRS is currently engaged in a major project to bring all of its technology into a condition to ensure that it will be Year 2000 (Y2K) compliant (to be able operate after the turn of the century). This effort includes not only working with the in-house information systems such as those used to maintain pension accounts, pay benefits and sustain the accounting records, but the project also includes guaranteeing that all other equipment which uses date embedded chip technology is Y2K compliant. Included in this project is notifying vendors and other State agencies under contract or Interagency Agreement with STRS that they must be Y2K compliant to ensure continued delivery of products and services they provide.

Internally, the primary focus is on the ON-LINE Information System which is the legacy system used to establish and maintain active member accounts as well as to pay all beneficiaries of the Defined Benefit retirement plan. As a result of our efforts, ON-LINE will be Y2K compliant in September 1998, well ahead of schedule.

Our push to make other portions of the internal information technology infrastructure Y2K ready is also nearing completion. This particular portion of the Y2K project includes the STRSNet, our wide area network (WAN) and desktop computers. Additional work remains to bring desktop computer programs into compliancy however these applications are not mission critical and furthermore this effort will be completed long before the end of next year.

Relative to contracts with outside providers, STRS is including Y2K compliancy language in all new contracts. For those existing contracts which will continue into the next century, STRS has sent a letter informing those vendors of the requirement that they must be Y2K compliant. As an assist to the Board, representatives from the most mission critical external service providers; State Street Bank, the State Controller's Office, the State Treasurer's Office and the Teale Data Center will make short presentations at the Board meeting relative to their respective Y2K projects.

DISCUSSION

To assist those who may not have an understanding of the Y2K problem, a brief background may prove helpful. The Y2K issue had its genesis during the early days of the computer industry. During this period, in the 1950's and 1960's, when the first few generations of computers were being installed in both the private and public sectors, both software developers and hardware manufacturers had to take "shortcuts" to ensure that the systems would meet business and scientific needs. One of the measures taken was to use only two digits in the year portion of the date field rather than the full four (e.g., 98 was used in lieu of 1998). By using this measure, the processing and storage capabilities of computers were enhanced. The downside of this action was that eventually, when the century ended and the year 2000 appeared, computers would not be able to perform some very critical calculations which were date dependent. The calculation of interest is an example of this. Depending on how the computer program was written, instead of January 1, 2000 being literally recognized, the calculation module of a program might recognize the year 2000 date as January 1, 1900, with substantially more interest being calculated rather than the correct amount.

When this action was taken, developers and manufacturers knew of the eventual resulting problem, but the belief was at that time that by the end of the century, normal re-programming and equipment replacement would address the problem. However with this goal not remaining in the forefront of those responsible for system development and maintenance and the associated very high cost of making the necessary changes, no real emphasis was placed on this effort until the mid 1990's. Suggestions by industry experts for the reason for this delayed remediation action has been the private sector concentrating market share, competitiveness and profit margins and the public sector faced with cyclical budget limitations. Additionally, even if a company or government agency wished to make a system solution any earlier, the products on which the programs were hosted, computer hardware and operating systems, development language and data base engines were often times not offered in a Y2K compliant version.

Due to the critical nature of the problem and the finite amount of services available to remedy the problem, Y2K solutions and related resources have grown very expensive. It is estimated that the global cost for remediating the Y2K problem in all sectors will well exceed $600 billion dollars. The State of California will spend over $245 million. For reasons explained later in the paper, the additional cost to STRS for Y2K remediation is approximately $470,000, substantially less than other departments which the same complexity of information technology.

STRS began its Y2K project in late 1996. During the ensuing months, STRS adopted a project methodology based on a model developed by the State Department of Information Technology. Based on this model, a workplan was developed which included these primary phases:

1. Awareness
2. Inventory
3. Assessment
4. Solution Design & Planning
5. Development & Modification
6. Testing
7. Implementation
8. Post Review and Modification

Currently, STRS has completed phases 1 through 4 for all components of its Y2K project. For many of the components, items 5 through 8 have also been completed. We anticipate that by September 1998, all mission critical components of the STRS Y2K project will be complete with many other portions also concluded by that date. By early 1999, all components will be nominally complete and the project will be finished by that time. Listed below are the various components of the STRS Y2K project:

ON-LINE Information System:

STRS was very fortunate to have a much less intensive primary system Y2K remediation effort than other departments for a variety of reasons. Foremost was the age of the system. Rather than having a system which was developed in the 1960's, the ON-LINE system was implemented in the mid 1980's. As such, many of the applications and almost all of the data base structure had Y2K compliancy built into the design of the system. For example of the 120 different types of records in the data base structure, 117 were already Y2K compliant.

In addition to the age of the ON-LINE system, ON-LINE stands as one integrated business enterprise system. It rests on one platform, a mainframe computer housed at the Teale Date Center, uses one integrated storage system technology, again at the Teale Data Center, is handled by one data base engine, the Integrated Data Base Management System (IDMS) and uses only four development languages, two related languages provided by the IDMS vendor, COBOL, a language used universally in the mainframe technology and DYL 280, a common report generation language.

Finally, by hosting the ON-LINE system at the Teale Data Center, STRS does not have to be directly involved in the remediation of mainframe and associated hardware, operating systems or any other aspect of actual computer operations. Instead, it was able to concentrate on the actual compliancy of its corporate business application software and data base structure.

As a result of these conditions, the incremental cost of remediation of the ON-LINE system is able to be accomplished at a cost of approximately $470,000.

As for the actual status of the ON-LINE remediation effort, all annual and quarterly processes are compliant and in production. The remaining programs used for monthly, weekly and daily processes are 75% corrected and unit tested. The residual 25% effort will be completed by September. At that time, the ON-LINE system will be 100% Y2K compliant. Included in this effort, will be accommodation to handle external interfaces such as all data from the County Superintendents of Schools offices and output to offices such as the State Controller's Office, the Internal Revenue Office, the State Franchise Tax Board, the Employment Development Department, insurance carriers and others. For those entities who cannot comply with STRS data submission or output formats, we have built conversion programs to handle their respective limitations.

Relative to ancillary issues related to the ON-LINE Information system, we are currently hosted on a Y2K tolerant version of the data base engine, IDMS and will be the first department whose data systems are hosted at the Teale Data Center to move to the newer fully Y2K compliant version. This move should occur no later than August of this year. Additionally, we are using compliant versions of our development language in which the ON-LINE system programs are developed.

We have been closely working with the Teale Data Center on infrastructure issues such as the aforementioned data base engine and development language versions. The Center has also been apprising us of their progress in making all Center infrastructure appliances Y2K compliant. We have been assured by Teale that all such infrastructure in support of STRS will be compliant long before the need arises in the next few months.

START Information System:

Built within the contract for the START system development is the requirement for the system to be Y2K compliant. Additionally, during the testing of the system, year 2000 dates will be used to verify that condition. We will also be using a tool supplied by the START vendor to further confirm Y2K compliancy.

Relative to the compliancy of the START data base engine, ADABAS, the Teale Data Center is currently testing its new Y2K compliant version. Once this testing is completed, STRS will migrate to that version. As for the two development languages used in concert with ADABAS, one is already compliant and in production and the other is in testing at Teale with migration to production slated after testing is completed. There should be no impact to the START project as a result of these movements. Teale is also moving to the compliant version of the data dictionary utilized by the START system.

Electronic Mail:

STRS utilizes IBM's Office Vision product for its electronic mail. This system is hosted at the Teale Data Center which is currently migrating to a Y2K version.

During the next few months we hope to replace Office Vision with a more capable system. This system will be hosted on STRSNet (the internal Wide Area Network). One of the conditions of procurement will be a certification from the vendor of that system that it is Y2K compliant.

STRSNet:

As noted earlier in this report, the STRS Network, or STRSNet, is the internal wide area network which currently ties over 320 of the departmental personal computer users together. Almost all of the remaining non-connected users will be STRSNet enabled during the next few months. Additionally, we will be completing the installation of the remaining infrastructure of STRSNet during the next year which will include firewalls (security devices allowing greater access such as external internet), a new, more powerful electronic mail system and internet and fax servers. Access to the corporate data base system (ON-LINE and soon START), internal file sharing, WEB enabled administrative processes, internet access (both to and from STRS) and other functionality will all eventually occur on STRSNet. There is one mission critical application currently hosted on STRSNet which is the departmental accounting package. It includes the general ledger, claims filed application, and cash processing modules. STRS has received the Y2K compliant version of this accounting package which will be installed by a vendor during the next month, making the total accounting package Y2K compliant.

In that the installation of STRSNet began a little over a year ago, STRS has been careful to ensure that all components of the network have been Y2K compliant. As a result, all associated hardware and software including the Novell operating system are Y2K ready. We will have to replace a device called a router during the next year. We are waiting until later in the year so that we obtain a replacement router which is the most up to date thus increasing its useful life.

Personal Computer Systems:

Hardware:

STRS utilizes 541 personal computers. As of the date of this report, 512 are either Y2K compliant (472 computers) or with some manual input can be made Y2K compliant (40 computers). The remaining 29 non-compliant machines will be replaced in the next few months as a result of normal scheduled equipment replacement.

Standard Software:

STRS utilizes standard personal computer/network software to meet its business needs. This software includes word-processing, spreadsheet, data base, presentation and other function specific products. In that most STRS users in the next few months will begin to obtain this software from the STRSNet, our emphasis has been to ensure that the STRSNet version of the software is Y2K compliant. Currently through vendor certification and/or through standard procedures, we have reached Y2K compliancy for software hosted on STRSNet.

For any users who will not be connected by the year 2000, we are helping them to obtain Y2K compliant versions for their desktop computers. (The number of these non-connected users on January 1, 2000, is expected to be very few and possibly may be none.)

Custom Application Software:

STRS has developed approximately 40 customized software applications for various departmental users. These applications perform a myriad of functions ranging from calculation of some benefit delivery penalty interest to the tracking of internal equipment and software inventory. Currently 42% of these applications are Y2K compliant with the remaining receiving remedial action or a re-write during the next few months.

STRS Contracts and Purchase Orders:

STRS Legal Office staff has prepared a Year 2000 Compliance Assurance Notice memorandum for verification of existing contracts. This notice is being sent to all contractors whose contracts with STRS will expire after January 1, 2000. The Notice formally informs these vendors of the need to provide contracted products and/or services in a manner conforming to the requirements

of Y2K parameters. Additionally, Y2K conformance language was developed and is being included in all new and amended contracts. Similar language was developed and has been included on all Purchase Orders.

STRS Facilities:

STRS is currently pursuing Y2K certification of its headquarters facilities. This includes all building equipment such as elevators, air conditioning/heating systems, lighting, security, and telephone systems. Also being surveyed and considered for replacement or remediation as necessary is all office equipment such as copiers and fax machines with date embedded technology.

Investment Issues:

STRS staff is currently obtaining assurances from all of our real estate advisors that they have pursued Y2K compliancy for STRS real estate assets. Additionally, in all Request for Proposals being issued, we are requiring each respondent to address their respective Y2K plans. As with all STRS contracts, Y2K compliancy language will be included in all new, amended or renewed investment contracts.